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09/878,768	06/11/2001	Jyri Paavola	540-011.2	1966

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EXAMINER

HENN, TIMOTHY J

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/878,768

Applicant(s)

PAAVOLA ET AL.

Examiner

Timothy J. Henn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17, 21, 30 and 31 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 7, 9, 11, 15, 16, 25, 26 and 29 is/are rejected.
- 7) ☒ Claim(s) 3, 5, 6, 8, 10, 12-14, 18-20, 22-24, 27 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Response to Amendment

2. The amended abstract is acceptable and overcomes the previous objections which are therefore withdrawn.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1, 2, 4, 7, 9, 11, 15, 16, 25, 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead (US 6,614,478) in view of Adrevski (US 4,591,901).

[claim 1]

Regarding claim 1, Mead discloses a joining construction for mounting CCD cells of a color line camera in an aligned fashion on a color splitting prism wherein each of the CCD cells have a light receiving input window and an opposite rear surface (Figures 3 and 4). However Mead does not disclose a prism which is attached to a prism housing.

Andrevski discloses placing mounting plates 206 and 208 which are secured to the top and bottom of a prism and which greatly enhance the structural integrity of the prism (c. 3, ll. 53-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include mounting plates or "a prism housing" such as those disclosed by Andrevski with the prism of Mead to greatly increase the structural integrity of the prism.

When combined with the mounting plates of Andrevski, the construction of Mead would include fastening elements having a length substantially larger than the length of the CCD cell (Figure 3, Item 34) and extending from a housing margin on one side of the light exit surface of the color splitting prism (i.e. the light exit surface of the prism 10) to another housing margin on the opposite side of the light exit surface (Figure 3, Item 22); a first glue joining extending along the rear surface of the CCD cell (Figure 3, Item 42) and being of a thermally conductive glue (c. 5, ll. 31-37, "silver-filled epoxy"); and third glue joints between the fastening element and said margins of the housing (Figure 3, Item 50; The examiner notes that although the glue 50 does not directly abut both the fastening element 34 and the housing margins, it is "between" the two as claimed), said third glue joints being of a thermally insulating glue (c. 6, ll. 2-12, "Norland 61" is inherently thermally insulating).

[claim 2]

Regarding claim 2, Mead in view of Andrevski discloses extensions of the fastening element which extend along opposite sides of the housing (i.e. if the prism were divided into two halves through the middle of each light exit surface, the fastening

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elements would extend along both the upper half and the lower half as can be seen from Figure 3).

[claim 4]

Regarding claim 4, Mead discloses the use of standard silver-filled epoxy as a first glue. Official Notice is taken that it is well known to use glues with high thermally conductivity when mounting CCD cells in order to aid in the dissipation of heat. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a silver-filled epoxy with a high heat transfer coefficient (i.e. $> 0.6 \text{ W/m}^2\text{K}$) in order to better dissipate heat from the CCD cells.

[claim 7]

Regarding claim 7, since the fastening element is not directly attached to the housing margins of the prism and is instead attached through the use of thermally insulating glue 50 which directly attaches the CCD to the prism the fastening element extensions are inherently attached by "heat-insulating elements" as claimed.

[claim 9]

Regarding claim 9, Norland 61 inherently has a heat transfer coefficient which is less than $0.3 \text{ W/m}^2\text{K}$.

[claim 11]

Regarding claim 11, Mead discloses a fastening element which includes a gold-plated copper mounting area for the CCD.

[claim 15]

Regarding claim 15, Andrevski discloses a housing which is metal (c. 3, ll. 63-66).

[claim 16]

Regarding claim 16, Mead discloses a method for mounting CCD cells on a color splitting prism the method of mounting each of the CCD cells having a light receiving surface and an opposite rear surface onto the prism comprising the steps of creating a thermally conductive surface contact between the rear surface of the CCD cell and a fastening element that is essentially larger than the CCD cell by joining them together with a first thermally conductive glue provided therebetween (Figure 3, Items 34, 42 and 32); allowing the first glue to harden fixing the CCD cell to the fastening element (c. 5, ll. 32-65); aligning the fastening element with the CCD cell fixed thereto at a correct position on the prism exit surface by moving the fastening element (c. 5, l. 60 - c. 6, l. 20); and gluing the fastening element, while maintaining the obtained alignment of the CCD cell at least two front surfaces (i.e. the lower portions and the upper portions of the CCD) located in the area of its outer margins (i.e. the areas above and below the CCD cells) and having areas smaller than the area of the CCD cell (i.e. the areas above and below the CCD cells are substantially smaller than the area of the CCD cell; Figure 3), with a third glue to the prism housing (Figure 3, Item 50). The examiner notes that although the fastening element is not directly glued to the prism housing, it is connected to the prism housing with a glue via the CCD cell which meets the limitations of claim 16 as currently written. However, Mead does not disclose mounting to a prism which is attached in advance with a housing.

Andrevski discloses placing mounting plates 206 and 208 which are secured to the top and bottom of a prism and which greatly enhance the structural integrity of the prism (c. 3, ll. 53-66). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include mounting plates or "a prism housing" such as those disclosed by Andrevski with the prism of Mead to greatly increase the structural integrity of the prism. Furthermore, it would be obvious to reinforce the prism using the mounting plates of Andrevski before mounting the CCD cell in order to avoid breaking the housing during the mounting process of the CCD cells by increasing the structural integrity of the prism beforehand.

[claim 25]

Regarding claim 25, Mead discloses the use of standard silver-filled epoxy as a first glue. Official Notice is taken that it is well known to use glues with high thermally conductivity when mounting CCD cells in order to aid in the dissipation of heat. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a silver-filled epoxy with a high heat transfer coefficient (i.e. $> 0.6 \text{ W/m}^2\text{K}$) in order to better dissipate heat from the CCD cells.

[claim 26]

Regarding claim 26, Norland 61 inherently has a heat transfer coefficient which is less than $0.3 \text{ W/m}^2\text{K}$.

[claim 29]

Regarding claim 29, Mead discloses a fastening element which includes a gold-plated copper mounting area for the CCD.

Allowable Subject Matter

5. Claims 17, 21, 30 and 31 are allowed.

[claims 17, 21, 30 and 31]

In regard to claims 17, 21, 30 and 31, the prior art does not teach or fairly suggest a method for mounting CCD cells to a color splitting prism comprising the steps of creating a thermally conductive surface contact between a CCD cell and a fastening element which is essentially larger than the CCD cell by joining them together with a first glue, aligning the fastening element with the CCD cell at the correct position at the prism exit surface, gluing the fastening element, while maintaining the obtained alignment of the CCD cell wherein the method further comprises the steps of: creating a thermally conductive surface contact between heat distribution pieces and the ends of the fastening element by joining them together with a second glue; and attaching the heat distribution pieces to the prism housing in a heat-insulating fashion and in order to make the structure rigid.

6. Claims 3, 5, 6, 8, 10, 12-14, 18-20, 23, 24, 27 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[claims 3 and 14]

In regard to claims 3 and 14, the prior art does not teach or fairly suggest one or several Peltier elements, which is/are in surface contact with the heat distribution pieces defined in claim 2 in order to reduce the temperature differences between the joining construction components and the prism. Although the use of Peltier elements to cool CCD cells is known in the art, the specific connection claimed is not known.

[claim 5]

In regard to claim 5, the prior art does not teach or fairly suggest heat distribution pieces that extend along the back side of the fastening element defined in claim 1, whereupon each fastening element is further attached to said heat distribution pieces by second glue joints.

[claim 6]

In regard to claim 6, the prior art does not teach or fairly suggest a construction according to claim 1 wherein each fastening element includes front surfaces that are substantially parallel to the photosensitive surface of the CCD cell; at each exit surface the two housing margins are essentially parallel to the exit surface of the color splitting prism and the front surfaces are supported against the housing margins.

[claims 8 and 10]

In regard to claims 8 and 10, the prior art does not teach or fairly suggest heat-insulating elements which are a fourth glue joint and/or a combination of an insulating layer and screws

[claims 12 and 13]

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In regard to claims 12 and 13, the prior art does not teach or fairly suggest a fastening element defined in claim 6 wherein in cross-section the fastening element of the CCD cell has the shape of a right-angled]-profile that opens towards the prism, at the center of which profile the CCD cell is attached, and the end branches of said profile form said front surfaces.

[claims 17, 21, 30 and 31]

In regard to claims 17, 21, 30 and 31, the prior art does not teach or fairly suggest a method defined in claim 16 further comprising the steps of: creating a thermally conductive surface contact between heat distribution pieces and the ends of the fastening element by joining them together with a second glue; and attaching the heat distribution pieces to the prism housing in a heat-insulating fashion and in order to make the structure rigid.

[claims 18, 23 and 27]

In regard to claims 18, 23 and 27, the prior art does not teach or fairly suggest a method defined in claim 16 further comprising the steps of: creating a thermally conductive surface contact between heat distribution pieces and the back side of the fastening element by joining them together with a second glue; and attaching the heat distribution pieces to the prism housing in a heat-insulating fashion and in order to make the structure rigid.

[claim 19]

Regarding claim 19 the prior art does not teach or fairly suggest a method of claim 16 further comprising using fastening elements having flanges with extensions

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and fastening the extensions to the prism housing in a heat-insulating fashion in order to make the structure rigid.

[claim 20]

In regard to claim 20, the prior art does not teach or fairly suggest a method defined in claim 16 further comprising the step of fastening the extensions of the fastening element to the prism housing in a heat-insulating fashion and in order to make the structure rigid. Although the use of Peltier elements to cool CCD cells is known in the art, the specific connection claimed is not known.

[claims 24 and 28]

In regard to claims 24 and 28, the prior art does not teach or fairly suggest a method defined in claim 16 wherein heat distribution pieces and fastening element extensions are attached to the prism housing: with a fourth thermally insulating glue; or by arranging an insulation between the heat distribution pieces and the prism housing, and by fastening the heat distribution pieces to the housing by mechanical fastening elements.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

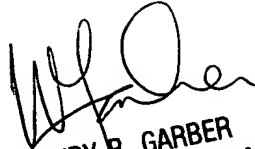
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